

**CLAIMS**

What is claimed is:

- 1    1.    A magnetic head, comprising:  
2            a seed layer structure comprising  $\text{Al}_2\text{O}_3$ , Ta, and NiFeCr seed layers;  
3            an antiparallel (AP) pinned layer structure formed above the NiFeCr seed layer;  
4                                  and  
5            a free layer positioned above the AP pinned layer structure.
  
- 1    2.    A head as recited in claim 1, wherein the AP pinned layer structure includes at  
2            least two pinned layers having magnetic moments that are self-pinned antiparallel  
3            to each other, the pinned layers being separated by an AP coupling layer.
  
- 1    3.    A head as recited in claim 2, wherein the AP pinned layers are constructed of  
2            CoFe and Co.
  
- 1    4.    A head as recited in claim 3, wherein the pinned layer closest to the seed layer  
2            structure includes CoFe.
  
- 1    5.    A head as recited in claim 2, wherein the AP pinned layers are both constructed of  
2            Co.

- 1    6.    A head as recited in claim 2, wherein the AP pinned layers are both constructed of  
2           CoFe.
- 1    7.    A head as recited in claim 2, wherein the AP pinned layers are constructed of  
2           materials selected to maximize a magnetostriction of the AP pinned layers.
- 1    8.    A head as recited in claim 1, wherein a thickness of the NiFeCr seed layer is  
2           selected to maximize a GMR signal.
- 1    9.    A head as recited in claim 1, wherein the head has at least a 10% stronger GMR  
2           signal over a head having a substantially similar structure except for the seed  
3           layers.
- 1    10.   A head as recited in claim 1, wherein the head has at least a 10% stronger GMR  
2           signal over a head having a substantially similar structure except for materials  
3           used to form the pinned layers.
- 1    11.   A head as recited in claim 1, wherein the head forms part of a GMR head.
- 1    12.   A head as recited in claim 1, wherein the head forms part of a CIP GMR sensor.
- 1    13.   A magnetic head, comprising:  
2           a seed layer structure comprising  $\text{Al}_2\text{O}_3$ , Ta, and NiFeCr seed layers;

3        an antiparallel (AP) pinned layer structure formed above the NiFeCr seed layer,  
4                wherein the AP pinned layers are constructed of CoFe and Co, wherein the  
5                pinned layer closest to the seed layer structure includes CoFe; and  
6        a free layer positioned above the AP pinned layer structure.

1    14.    A head as recited in claim 13, wherein the head has at least a 10% stronger GMR  
2           signal over a head having a substantially similar structure except for the seed  
3           layers.

1    15.    A head as recited in claim 13, wherein the head has at least a 10% stronger GMR  
2           signal over a head having a substantially similar structure except for materials  
3           used to form the pinned layers.

1    16.    A head as recited in claim 13, wherein the head forms part of a GMR head.

1    17.    A magnetic head, comprising:  
2           a seed layer structure comprising Al<sub>2</sub>O<sub>3</sub>, Ta, and NiFeCr seed layers;  
3           an antiparallel (AP) pinned layer structure formed above the NiFeCr seed layer,  
4                wherein the AP pinned layers are constructed of Co and Co; and  
5           a free layer positioned above the AP pinned layer structure.

1    18.    A head as recited in claim 18, wherein the head has at least a 10% higher positive  
2            magnetostriction over a head having a substantially similar structure except for  
3            the seed layers.

1    19.    A magnetic storage system, comprising:  
2            magnetic media;  
3            at least one head for reading from and writing to the magnetic media, each head  
4                    having:  
5                    a sensor having the structure recited in claim 1;  
6                    a write element coupled to the sensor;  
7            a slider for supporting the head; and  
8            a control unit coupled to the head for controlling operation of the head.